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# A Study of the Absorption Spectra of Cerium in Glasses

AUTHOR(S):

Tashiro, Megumi; Soga, Naohiro; Sakka, Sumio

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## ABSTRACTS

ed on asymmetric synthesis, (1R:2R) and (1R:2S)-configurations were assigned to these isomeric acids and consequently the absolute configuration of (–)-*cis*-umbellularic acid revealed all the configurations of terpenoids of thujane series.

### A Study of the Absorption Spectra of Cerium in Glasses

Megumi TASHIRO, Naohiro SOGA and Sumio SAKKA

*Yogyo Kyokaishi (Journal of the Ceramic Association, Japan)*, **68**, 132 (1960)

The absorption bands of cerium in trivalent and tetravalent states in silicate and phosphate glasses, whose exact positions are still open to discussion, and the effects introduced by the change of composition and of melting condition were investigated.

For the measurement of the absorption spectra of silicate glasses with poor ultraviolet transmission the thickness of the sample plates was reduced to 0.12~0.02mm by polishing.

The results obtained are as follows: (1) In the silicate glass consisting of  $K_2O$ ,  $BaO$ , and  $SiO_2$ ,  $Ce^{3+}$  gives a sharp and weak absorption band at  $320 m\mu$ , whereas  $Ce^{4+}$  gives a broad and strong absorption band in ultraviolet region below  $350 m\mu$ . (2) In the phosphate glass consisting of  $K_2O$ ,  $BaO$ ,  $Al_2O_3$  and  $P_2O_5$ ,  $Ce^{3+}$  gives three sharp and weak absorption bands at 294, 245, and  $227 m\mu$ , whereas  $Ce^{4+}$  gives a broad and strong absorption band in ultraviolet region, as before.

### Studies on the Mechanical Strength of the Photosensitive Opal Glass

Megumi TASHIRO and Sumio SAKKA

*Yogyo Kyokaishi (Journal of the Ceramic Association, Japan)*, **68**, 158 (1960)

When a lithium containing photosensitive glass is exposed to ultraviolet light and then subjected to the heat treatment, it changes into a polycrystalline material characterized by its good mechanical properties (S.D. Stookey, *Ind. Eng. Chem.*, **45**, 115 (1953)).

The purpose of this paper is to present the relation between the mechanical strength and the grain size of the constituent crystallites of the resultant material.

Glass specimens ( $2.5 \times 5 \times 5.0$ mm) of the oxide composition  $SiO_2$  81,  $Li_2O$  12.5,  $K_2O$  2.5,  $Al_2O_3$  4,  $CeO_2$  0.03, Au 0.027% (wt.) were exposed to ultraviolet light by placing them at a distance of 10 cm from a 500 watt high pressure mercury lamp for 2 to 1000 min. After the exposure they were heated at three steps; first at  $510^\circ C$  for 30 min. to cause formation of gold nuclei, then at  $620^\circ C$  for 60 min. to